person only. At the finish, a feat was accomplished which astonished every one, by cutting a breadth of laid and trampled grass in the most perfect manner. The superiority of Wood's machine over Gardner's was very marked; indeed, the work of the latter upon the heavy grass was inferior, while the work to the horses was most severe.

The judges now declared themselves quite satisfied. They highly commended Wood's machine, and awarded it a silver medal. Mr. Gardner's machine was commended. Although special reference was not made to time, the agents for Wood's machine guarantee it to cut a minimum of one acre per hour.

It will be interesting to know that the successful machine was worked by a Mr. Herman, who arrived from the United States only a few days ago, and who elicited the praise of all present for the cool and masterly manner in which he managed it."

IMPROVEMENT IN STEAM-BOILERS.

We find the following article in the Portland (Me.) *Advertiser*, of July 7; and as it has reference to the invention of Mr. F. B. Blanchard, which we illustrated and explained on page 412, Volume XIII., of the SCIENTIFIC AMERICAN, we transfer it to our own paper for the benefit of our readers, as it is a practical test of the value of the improvement, and thoroughly confirms the opinion we expressed nearly a year ago:—

"We have had running about in our harbor, for a few days past, a steam-tug on a novel plan, wherein the use of a chimney is dispensed with entirely while running, and the heat that usually passes off from the top of the smoke-pipe, oftentimes at so high a temperature as to ignite the gases, is made available to do duty in the engine.

A Board of Engineers was called by the proprietor of the tug, Captain Willard, and Mr. Blanchard, the inventor of the improvement, for the purpose of ascertaining the exact saving by this invention over all our old boilers, in order to settle the amount to be paid by Capt. Willard for the use thereof, and to test carefully the whole matter for the benefit of the public; and, for the information of all interested in this subject, we herewith annex the certificate of that Board of Engineers:—

'We, the undersigned, by request of Capt. Willard and Mr. F. B. Blanchard, and by a desire of our own to ascertain the value of Mr. Blanchard's invention, went on the steam-tug *Tiger* for the purpose of experimenting with the boiler, both upon the old plan and with Mr. Blanchard's improvements, it having been so constructed that it could be operated both ways.

On Monday last we experimented upon the old plan, carefully noting every particular, hight of water and head of steam, both at the commencement and the termination, quantity of fuel used and quantity left in the furnace at the conclusion. Commencing our experiment with the water at the boiling point, then noting the time consumed, distance run and revolutions made, the following is the summing-up of the results:—

Coal used to build fire and get up steam at the wharf, lbs.	1,071
Charged furnace with coal used in running the trip, lbs.	1,008
	2,079
Deduct coal saved from furnace, lbs.	500
Deduct quantity supposed to be consumed before boat left the wharf, in getting up steam, lbs.	200
	700
	1,379

On Thursday, the boiler was used with Mr. Blanchard's improvements, and everything made to correspond in getting up steam before starting from the wharf as in the former experiment:—

Coal used to build fire and get up steam at the wharf, lbs.	1,071
Charged furnace with coal used in running the trip, lbs.	126
	1,197
Deduct coal saved from furnace, lbs.	311
Do. quantity consumed, as before, lbs.	200
	511
	686

This statement is made in a simple form, so that any one using a steam-boiler, or interested in the saving of fuel, may readily understand it, and shows the quantity of fuel saved by Blanchard's improvement over the best made boilers to be the amount of over one-half.

The time of running, distance, number of revolutions, head of steam, hight of water, &c., were all made fully equal in Mr. Blanchard's experiment to the one made on Monday.

The engine was worked at full stroke without any cut-off, and the expansive power of super-headed steam being much greater than ordinary steam, we have not the least hesitation in stating that, had the test been made with an expansive-working engine, Mr. Blanchard would have shown a far greater gain than even the remarkable results above proved.

Signed:—JOHN SPARROW, Superintendent of Portland Company's Works; PHINEAS BARNES, JR., of Portland Co.'s Works; J. JOHNSON, Chief-engineer of *Forest City*; IRA WINN, Machinist and Engineer; THOMAS FAGEN, Eng'r of Portland Sugar House; JOS. L. WINSLOW, JR., of Winslow's Machine Shop; WM. K. RHODES, Eng'r of Winslow's Machine Shop; CHAS. W. CAHOON and WM. WILLARD.'"

An advertisement of Mr. Blanchard may be found in our advertising columns.

BOILER-IRON.

The explosion of the boiler of the steamer *Bay State*, which recently took place on the East river, is attributed to an unseen flaw in the metal, and the blame of the explosion is thus to be fastened upon something which could not be detected when the boiler was made. But is this really the case? If the defective plate stood the hydraulic test of the Inspector, it should have stood the legal pressure of the steam, which is lower than the Inspector's pressure test. We throw out this remark because it is a conclusion derivable from all the circumstances of the case.

It has been stated by a correspondent of the *Daily News*, under the signature of "Engineer," that some dealers in boiler-iron place fraudulent stamps on poorer qualities, and sell them for the best. In regard to this statement, the *Courier and Enquirer* says:—

"When the laws providing for the inspection of steamboat boilers were passed, it was also provided that the materials of which the boilers were constructed should likewise be inspected. The intention of our legislators was that every means should be resorted to for rendering steamboat-traveling as safe as possible. It would appear, however, that though these inspectors may discharge their duties faithfully, yet the public can be cheated out of the benefits to be derived from their doing so. It is now said that iron which has been inspected and stamped, is sometimes re-stamped—that iron of a *second* quality is stamped as the *best* boiler-iron."

Three leading firms in this city, who deal in boiler-iron, have come out in a card, indignantly disclaiming such a practice for themselves, and demand to have the matter most thoroughly investigated. If the correspondent of the *Daily News* knows the firms who fraudulently stamp boiler-iron, it is very easy for him to point them out, and he ought to do it. Viewing this question from our position, it seems to us that the public discussion about fraudulent stamps on boiler-iron has been initiated for the purpose of directing public attention from the true cause of the explosion. We may be mistaken in this view, but from the facts which have been elicited thus far, we think our conclusion a very reasonable one.

THE MOTHER MOLDS THE MAN:—That it is the mother who molds the man, is a sentiment beautifully illustrated by the following recorded observation of a shrewd writer: "When I lived among the Choctaw Indians, I held a consultation with one of their chiefs respecting the successive stages of their progress in the arts of civilized life; and among other things, he informed that at their start they fell into a great mistake—they only sent boys to school. These boys came home intelligent men, but they married uneducated and uncivilized wives—and the uniform result was, their children were all like their mothers. The father soon lost all his interest in both wife and children. 'And now,' said he, 'if we would educate but one class of our children, we should choose the girls, for when they become mothers they educate their sons.' This is the point, and it is true. No nation can become fully enlightened, when mothers are not in a good degree qualified to discharge the duties of the home-work of education."

EXPERIMENTS WITH TURBINE WHEELS.

MESSRS. EDITORS:—The experiments upon turbine water-wheels, directed by the Watering Committee, will be commenced on the first of August. Models must be constructed to discharge about 200 cubic feet per minute, and work under a head and fall of from 6 to 12 feet. A drawing must accompany each model, and a description of the peculiarities of the wheel.

These experiments are undertaken to determine the wheel that will be best adapted (all things considered) for our "Fairmount Works." Two of the wheels approved of will be ordered at once. They will be of about 100 horse-power each, and intended to work under a head of from 6 to 12 feet, varying with the tide. Each wheel will be required to work two double-acting pumps, 18 inches diameter of cylinder, and 6 feet stroke, making from 10 to 16 strokes per minute, and pumping the water into a reservoir 115 feet above the surface of the dam.

H. P. M. BIRKENBINE, Chief-engineer.

Philadelphia, July 16, 1859.

[This letter came to hand after we had gone to press last week; but we suppose that, although the experiments are to be commenced on the first of next month, they may be continued for a considerable period of time afterwards with the same arrangements. Mr. Birkenbine appears to be favorably impressed with the performance of the turbine over the breast-wheels which have been heretofore used at Fairmount. We suppose this conclusion is founded on the comparative action of the turbine which they now have, and the old wheels. It will afford us pleasure to hear the results of those experiments.—EDS.

STEAM CARRIAGES.

MESSRS. EDITORS:—In your number for July 16, is a notice entitled, "Lee & Larned's Self-propelling Steam Fire-engine," which concludes as follows: "We think that this journey shows that there is an engine suitable for common roads, and perhaps a more extended application than fire-engine purposes may be found for Messrs. Lee & Larned's build of steam carriages." I wish to state that I am the inventor of all but the boiler and pumps of the two engines built for New York City, and illustrated on page 89, Volume XIV., SCIENTIFIC AMERICAN. I made the outlines from which those illustrations were engraved, and the working drawings from which the machines were built; and I had no assistance of any engineer in determining the proportions, although I earnestly requested leave and means to get the advice of locomotive-builders. The engine mentioned in your paper of the 16th, I am informed, is on the same plan, except that it is made narrower by narrowing the frame behind, so that, while there is room forward for the boiler, the wheels and engines are brought nearer together. This modification I advised at first, and made a drawing to show it.

Messrs. Lee & Larned have no right to build steam carriages on this plan, nor have they a right to use it for fire-engines, other than the two built for New York. They claim a right, which claim they found on an agreement which they have forfeited, and I have notified them that I intend to apply for a patent as soon as my present experiment is completed, and that they should not use my invention.

J. R. FISHER.

Paterson, N. J., July 16, 1859.

["Honor to whom honor is due."—EDS.

WASHING HORSES LEGS.—It is quite a common custom for carmen and hostlers to "founder" noble horses, by the erroneous practice of dashing of cold water on their legs when they are dirty. In regard to this practice Sir George Stephens the eminent veterinary surgeon says, "Wherever it is necessary to wash horses' legs, do it the morning. Most grooms, acting on a different principle, was them as soon as the animal comes in. I am convinced this is a bad practice. When the roads are dirty, and the weather wet, and the legs already soaked, washing can do no harm; but to deluge the legs with water the moment a horse enters the yard, heated with exercise, is to my mind, as unnatural and absurd as to jump into a shower-bath after playing an hour at cricket. My plan is, rubbing down with straw and a dry brush, and the next morning wash as clean as soap and water can make them, Pick and wash the soles as soon as the horse comes in."